

ABSTRACT OF THE DISCLOSURE

An active pixel sensor is disclosed. In one embodiment, a solid state radiation detection unit may be fabricated using a semiconductor substrate having a plurality of CMOS pixel circuits incorporated into the substrate. Typically, each of an array of pixel circuits includes a charge collecting pixel electrode, a charge sensing node, a gate bias transistor separating the charge collecting pixel electrode and the charge sensing node, and a pixel capacitor to store charges collected by the charge collecting pixel electrode. A charge measuring circuit comprising at least one transistor may also be configured with each pixel circuit. The sensor may further include a radiation absorbing layer comprised of photoconductive material, as well as a surface electrode layer comprised of electrically conducting material. The sensor is typically configured with an array measurement circuit for measuring charges collected by the array of charge collecting pixel electrodes and for pixel data output.